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A HIGH ENERGY X-RAY STUDY OF THE GALACTIC CENTER(U)
SMITHSONIAN ASTROPHYSICAL OBSERVATORY CAMBRIDGE MA
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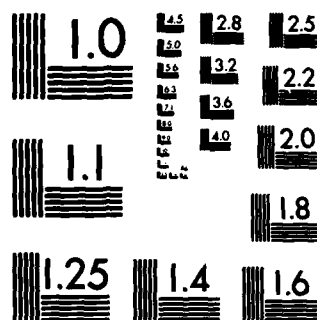
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A HIGH ENERGY X-RAY STUDY OF THE GALACTIC CENTER

Contract N00014-84-K-0015

FINAL REPORT

For the period 1 October 1983 through 30 April 1985

Principal Investigator:

Dr. Frederick K. Knight

April 1985

Prepared for

OFFICE OF NAVAL RESEARCH

Arlington, VA 22217-5000

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The Smithsonian Astrophysical Observatory
is a member of the
Harvard-Smithsonian Center for Astrophysics

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Summary

In this project I have studied the characteristics of the high-energy X-ray sources within 20° of the center of the Milky Way Galaxy. The major aim was to obtain an acceptable fit to data from the UCSD/MIT Hard X-ray and Low Energy Gamma-Ray experiment on HEAO-1. In this manner, I could study the spectra, positions and time-variability of about 25 sources. The major results of this project are the following. (1) Most of the sources have steeply falling spectra as expected. 2) An intense, hard source exists within 0.5° of the galactic center, and it has a two-component spectrum similar to the black hole candidate Cygnus X-1. 3) No one source's spectrum can be extrapolated to higher energy at the intensity of the gamma-ray continuum, which implies that this continuum is a composite of a number of sources.

Publications

F.K. Knight, "Spectra and Positions of Galactic Center High-Energy X-ray Sources," BAAS, 16, 981, (1985).

F.K. Knight, R.E. Rothschild, J.L. Matteson, "High-Energy X-ray Sources near the Galactic Center I. Time-Averaged Spectra and Positions to be submitted to Ap.J. (1985).

F.K. Knight, R.E. Rothschild, J.L. Matteson, "High-Energy X-ray Sources near the Galactic Center II. Time Variability, in preparation (1985).

Travel

1. F.K. Knight to University of California, San Diego for data analysis, June 1984.
2. F.K. Knight to University of California, San Diego, for data analysis, August 1984.
3. F.K. Knight to University of Arizona, Tucson for presenting a talk at the American Astronomical Society meeting.



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